Chapter 4: Baseline Opportunities Analysis

The purpose of the Baseline Opportunities Analysis is to explore existing economic conditions and activity in the Inner Katy area to determine redevelopment potential, particularly if *high-capacity transit (HCT)* were to be introduced into the area. In this chapter overall market conditions are examined, specific areas with redevelopment potential are identified, and potential uses that would result from redevelopment are explored. In addition, the general impact of transit investment is considered, as is the specific role of light rail in Dallas, Texas, and Portland, Oregon – two communities in which high-capacity transit has prospered despite the need to superimpose the system over existing development. The Baseline Opportunities Analysis concludes with an examination of the economic potential of the two specific HCT corridors, Alignments B and C, which this study considers for the Inner Katy area.

High-Capacity Transit *involves faster and more frequent service, longer service hours each day, and two-directional service in the same corridor versus traditional one-way service types.*

Chapter Highlights

Inner Katy Economy

- Harris County Appraisal District data indicated approximately 13,000 properties in the study area (2000 tax year).
- The total appraised value of analyzed properties in Inner Katy was $1.8 billion in 2000, a 25.2 percent increase over 1999, primarily from rising land values.
- In tax year 2000, the City of Houston collected an estimated $8.2 million in property tax revenue within the Inner Katy area and Harris County collected $4.5 million. [*It should be emphasized that these are rough estimates based on various assumptions due to data limitations.*]
- Taxable retail sales in the area increased by 6.6 percent during the 1990s compared to a 54.6 percent increase citywide. State and local sales tax revenue from Inner Katy businesses was $12.4 million in 2000, based on taxable sales of more than $150 million.
- The Inner Katy area contained approximately 1,000 business establishments in 1999 (mostly small businesses), employing an estimated 18,000 to 21,000 people and generating an annual payroll of $630-810 million.

Inner Katy Real Estate

- The area within zip code 77007, which is roughly equivalent to the Inner Katy study area, has experienced significant development and rehabilitation activity in recent years, with 767 building permits filed in 2001 (the majority for new residential construction and some related to tropical storm damage).
- The Inner Katy residential market is wide-ranging and eclectic, both in terms of price and home styles. A sampling of properties recently on the market ranged from a dilapidated home for $30,000 to a high-rise condominium selling for $9.5 million. Prices for vacant land ranged from $7 to $45 per square foot.

- Non-residential properties are also mixed, from high-end new commercial centers with national chain stores to valued local "mom-and-pop" businesses – and also vacant/abandoned properties subject to vandalism.
- Obstacles to redevelopment in certain areas of Inner Katy include relatively high land costs, limited profit potential to attract developers (who have "moved on" to other areas of town), undersized and/or shallow properties, and resulting costs and delay to assemble parcels into practical sites.

Inner Katy Redevelopment Potential

- Overall, the Inner Katy area has significant long-term redevelopment potential. Aside from some areas with challenges to overcome, prevailing rents, construction costs and predominant building types (including three-story residential development) do not represent obstacles to long-term redevelopment for most of the study area.
- Computer modeling of Inner Katy redevelopment potential showed retail as the most profitable building type (followed by office and then residential), generating the most estimated revenue compared to development costs over the long term. [*The Appendix to this chapter includes the redevelopment model methodology*.]
- Retail development would be profitable in most of the study area. However, some areas, despite this market potential, are not open to retail uses due to residential deed restrictions.
- A computer model used to generate a "combined redevelopment scenario" (a desired mix of residential and non-residential land uses that would also be strongly supportive of transit use) resulted in 2,461 acres of overall redevelopment, with 1,120 acres of residential activity, 1,018 acres of retail, and 324 acres of redevelopment for office uses.
- The combined redevelopment scenario generates 40,610 additional households and 35,172 new employed persons. The Feasibility Analysis in Chapter 6 is partly intended as a "reality check" to bring such large numerical estimates back into line with the ability of the Inner Katy area to actually "absorb" this development. Property owner intentions, development limitations (such as deed restrictions), and the extent of actual market demand for various types of development are factors that can temper estimated redevelopment potential.
- The final mapping of redevelopment potential in this chapter (Figure 4.7) shows the most obvious and immediate potential concentrated in the northwest part of the study area north of the Katy Freeway, where many large current or former industrial properties are situated. More of these high-potential areas are along Alignment B, although Alignment C also traverses some of this area west of Westcott/Washington Avenue.
- The timing of redevelopment will be impacted by local constraints (land costs, undersized parcels for major retail) as well as metropolitan-level trends (e.g., high office vacancy rates that dampen new construction).

In addition, the Inner Katy area is clearly in competition with other areas for finite redevelopment interest and investment dollars.

- Short-term redevelopment of prime sites may be the key to increasing long-term, overall market demand in the area. Careful selection of transit station locations – and timely redevelopment of station vicinities – will be critical to the success of both high-capacity transit and associated economic reinvestment and community enhancement.

Impact of Transit

- Numerous studies point to the economic benefits of proximity to high-capacity transit service in terms of enhanced property access, increased residential and non-residential property values, occupancy, rents, retail sales, employment and payrolls. The positive impacts are most pronounced within easy walking distance (typically a quarter mile or less) of a transit station.
- Case studies from other cities show that some transit lines are built "where the riders are", thereby spurring reinvestment and in-fill development in existing commercial or residential areas, while other lines are built "where the riders will be," helping to attract development types and designs specifically suited for TOD.
- Portland officials point out that light rail has not caused new development but has "influenced the location, design and timing" of what was already occurring in the regional market. Some lines are more effective than others, highlighting the need for careful planning and public-private coordination.
- It is estimated that the highly successful Dallas Area Rapid Transit (DART) system has attracted nearly $1 billion in private development along existing and future lines. Another study found that the taxable value of property around DART stations was about 25 percent higher than comparable properties not served by rail.

Further detail on these and other results of the Baseline Opportunities Analysis are presented in the remainder of this chapter.

Inner Katy Market Conditions

The impact of transit projects can be assessed by a number of measures, including ridership, traffic mitigation, and direct fiscal impact. This chapter focuses on impacts associated with development opportunities in the study area. These *redistributive impacts* include increased land development opportunities and the related increase in employment and income in the immediate vicinity of high-capacity transit lines, as well as the general increase in economic activity that can result. According to research sponsored by the Federal Transit Administration, these measures are considered to be redistributive because "they quite likely represent economic activities that would have occurred anyway in the absence of transit investment." Transit serves as a magnet that attracts more investment to one area

Redistributive impacts *account for locational shifts in economic activity within a region such that land development, employment, and, therefore, income occur in a transit corridor or around a transit stop, rather than being dispersed throughout a region.*

Economic Impact Analysis of Transit Investments: Guidebook for Practitioners. Transportation Cooperative Research Program Report 35. Transportation Research Board.

and away from another, but it is investment that was already going to occur somewhere in the region.

Estimating the impact of economic activity at the neighborhood level is challenging. The detailed data required for such an analysis – employment by industry, occupation, wages, and input/output tables – are limited or not readily available below the county level. In the absence of a formal impact model, a conceptual model was developed for the purposes of this analysis. Conceptual models provide a framework for analysis, independent of specific modeling software, based on the major features or components of the variable being studied. In this case, current economic activity in the study area was estimated in three major areas: property tax revenues, sales tax revenues, and wages. Other sources of revenue were not considered, including intergovernmental transfers, permitting and licensing fees, and miscellaneous business taxes.

In the absence of neighborhood-level data, most of this analysis was performed using zip code-level data. Although there are several other zip codes that touch on the study area, the 77007 zip code is almost contiguous with the Inner Katy area as defined for this project (see Figure 2.1 in Chapter 2).

Property Tax Revenue

Estimates of property tax revenues generated by homes and businesses in the study area were based on data supplied by the Harris County Appraisal District (HCAD). This data included the following information for all properties in the study area: (1) property identification number, (2) the year the improvements (if any) were made, (3) a use code indicating the land use, and (4) the appraised value of the land and improvements in tax years 2000 and 1999 (the most recent available data at the time this study element was prepared).

The HCAD file contained data on 13,061 properties in the study area. One-hundred eighteen (118) properties were excluded at the outset of the analysis due to insufficient data (the record for these properties did not include any data on the value of the land or improvements or a physical address or legal description). Of the remaining 12,943 properties, 671 properties had no indication of land or improvement values for either 1999 or 2000. These properties are primarily owned by religious groups, non-profits, and state and local governments and, as such, are presumed to be tax exempt. This analysis was based on the remaining 12,272 properties for which some land or improvement value was indicated in at least one of the two tax years.

NOTE: *Unless otherwise indicated, dollar values presented in this chapter are not adjusted for inflation.*

As shown in **Table 4.1**, the total appraised value of the remaining properties was $1.8 billion in 2000, up 25.2 percent from the previous year. This increase was largely the result of rising land values in the area, which grew by nearly 35 percent. By comparison, the value of improvements rose by approximately 18 percent during this period.

TABLE 4.1:
Estimated Appraised Value of Property: 1999, 2000

	1999		2000		Change in Value 1999-2001
	Value	Percent of Total	Value	Percent of Total	
Land	$627,236,780	43.8%	$845,531,090	47.1%	34.8%
Improvements	$805,834,882	56.2%	$948,571,269	52.9%	17.7%
TOTAL	**$1,433,071,662**	**100.0%**	**$1,794,102,359**	**100.0%**	**25.2%**

Source: Harris County Appraisal District

The total value of land and improvements for each property identified by HCAD was then summed by land use type. The appraisal district uses a complex land classification system with more than 230 categories, designated by "use codes." To simplify the analysis, HCAD's use codes were grouped into 11 categories. In many cases, the use code assigned to a particular property was obviously in error (see note). A number of other problems with the data were also found. For example, many of the properties did not have market values listed for either land or improvements (or both) in one or the other tax years. As a result, property values are likely to be somewhat higher than indicated by this analysis. Alternately, several properties that were coded as "vacant" had appraised values listed for improvements. Many of the parcels were also lacking information about square footage, as evidenced by the discrepancy between the acreage reported in **Table 4.2** below versus Table 2.5 in Chapter 2. The scope of this project, however, did not allow for the parcel-by-parcel inventory that would be required to "clean" the data. *Due to these and other inconsistencies in the data, the results of this basic analysis should be used with caution.*

NOTE: HCAD data contained several inconsistencies, particularly with regard to the "use code" assigned to properties. For example, a number of properties that were designated with use code 620, which is intended for religious properties, were owned by non-religious concerns (such as Southwestern Bell Telephone and Houston Lighting & Power). This category, as well as several others, was ultimately categorized under "assorted industrial" due to the large number of apparent inconsistencies.

These values by major property types were then used to estimate the overall property tax revenue generated in the study area (see **Table 4.11** in the Appendix to this chapter). *Again, these figures should be viewed with caution. They are intended only to provide a rough approximation.* Estimates were not calculated for the following categories: exempt, vacant; exempt, office; transportation and utilities; and parks and open space. Taxing jurisdictions included in the analysis were also limited, with estimates prepared for the City of Houston and Harris County only. Furthermore, no attempt was made to estimate the value of business personal property (i.e., tangible personal property used in the production of income, such as furniture, computers, stored chemical or petroleum products, or vehicles).

Calculation of property tax revenues for single-family residential is complicated by the application of various exemptions, the most common of which is the homestead exemption. Both the City of Houston and Harris County have a homestead exemption of 20 percent of the appraised value, up to $15,000. In the absence of specific information regarding the percentage of homes that are eligible, the homestead exemption was applied to all single-family properties, despite the fact

that a search of the tax records indicated that many properties have not taken this exemption. This resulted in a taxable value of $436,212,108 for the 7,428 single-family residential properties.

TABLE 4.2:
Appraised Value of Property by Type: 2001

Property Type	Acres Reported	Appraised Value		
		Land	Improvements	Total
Residential, vacant	53.9	$2,718,600	$1,946,540	$4,665,140
Residential, single-family	914.9	$250,905,890	$262,362,982	$513,268,872
Residential, multi-family	186.6	$84,545,120	$79,810,290	$164,355,410
Commercial, vacant	105.7	$61,175,910	$68,368,180	$129,544,090
Commercial, assorted	394.6	$164,055,990	$133,628,107	$297,684,097
Industrial, vacant	32.1	$10,482,070	$14,494,940	$24,977,010
Industrial, assorted	353.4	$93,971,300	$110,941,916	$204,913,216
Exempt, vacant	60.8	$26,902,520	$26,769,684	$53,672,204
Exempt, office	9.4	$4,517,630	$3,700,280	$8,217,910
Transportation and utilities	374.1	$76,155,000	$164,935,210	$241,090,210
Parks and open space	222.0	$70,101,060	$81,613,140	$151,714,200
TOTAL	**2,707.6**	**$845,531,090**	**$948,571,269**	**$1,794,102,359**

Source: Harris County Appraisal District

Both the City of Houston and Harris County provide an exemption for households headed by persons 65 years and over. Harris County has a generous exemption for this category, exempting the first $156,240 of appraised value. The City of Houston exempts up to $34,006. Due to the complexity of calculating it, the 65-years-and-over exemption was not applied to the estimates shown above. Data from the 2000 Census indicate that 16 percent of households in the area have one or more people in the 65-plus age group.

Sales Tax Revenues

Retail businesses in the 77007 zip code generated more than $150 million in taxable sales in 2000 (see **Table 4.12** in the Appendix to this chapter). This amounted to approximately $12.4 million in state and local sales tax revenues, as reported by the Texas Comptroller of Public Accounts. This figure was up from nearly $141 million

in taxable sales in 1990 (an estimated $11.6 million in state and local sales tax revenue), an increase of only 6.6 percent during the decade. By comparison, taxable retail sales for the City of Houston increased by 54.1 percent during the same period, rising from $9.5 billion in 1990 to $14.6 billion in 2000.

Building materials and garden supply stores comprised the largest source of taxable retail sales in the area, generating more than 40 percent of total taxable sales in 2000. This retail segment also saw the largest increase in sales during the decade, rising by nearly 75 percent. Eating and drinking establishments were the next largest source of taxable sales, at approximately 20 percent of the total in 2000. This was also the only other retail segment that made significant gains during the period, with taxable sales climbing by 38.6 percent from 1990 to 2000. The largest decline in taxable sales was experienced by miscellaneous retail, which decreased by more than 50 percent over the decade, despite a 27 percent increase in the number of establishments.

Employment and Wages

According to *Zip Code Business Patterns* data published by the U.S. Census Bureau, the 77007 zip code contained 1,004 business *establishments* in 1999 (see **Table 4.13** in the Appendix to this chapter). These establishments employed approximately 18,100 people with an annual payroll of $630.8 million. Nearly one-half of the establishments (48.5 percent) in the study area employed fewer than five people. Virtually all of the establishments (99.7 percent) meet the U.S. Small Business Administration's definition of a small business, which is frequently defined as a business employing fewer than 500 people. This is slightly misleading, however, because some of the "establishments" may be part of a larger firm or corporation. Conversely, the common perception of "small business" is for establishments with far fewer employees than 500.

The largest industry sector represented in the area is professional, scientific & technical services, which accounted for nearly one-fifth of establishments (18.6 percent) in the study area in 1999. Of these, the majority (68.3 percent) were law firms or related services. Other significant industries in the area, in terms of the number of establishments, include wholesale trade (12.8 percent), retail trade (9.8 percent), construction (9.2 percent), other services (9.1 percent), and manufacturing (8.1 percent). Printing and fabricated metal industries represented the largest number of manufacturing establishments in the area, with 16 and 15 establishments, respectively.

While *Zip Code Business Patterns* data do not include employment figures by industry, they do provide the number of establishments within particular firm sizes (e.g., one to four employees, five to nine employees, and so on). The mid-point of these firm size categories was used to calculate estimates of employment by industry. This method resulted in a total of 20,707 employees, which is similar to the disclosed level of employment in the zip code (18,146 employees). Wholesale trade was the largest industry in terms of employment, with an estimated 4,200 employees in 1999, amounting to 20 percent of the total employment in the area. This industry was followed closely by construction and manufacturing, which employed approximately 3,500 people each (17 percent of total employment).

Zip Code Business Patterns *data are based on various programs conducted by the U.S. Census Bureau, such as the Economic Censuses, the Annual Survey of Manufactures, and Current Business Surveys, as well as from administrative records of the Internal Revenue Service, the Social Security Administration, and the Bureau of Labor Statistics. The data do not include self-employed persons, employees of private households, railroad employees, agricultural production workers, and most government employees.*

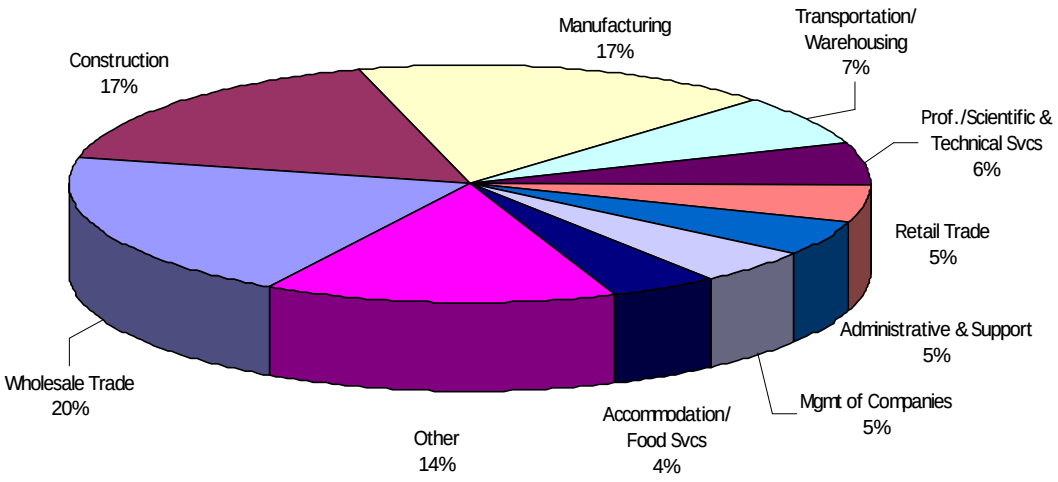
An ***establishment*** *is a single physical location at which business is conducted or services or industrial operations are performed It is not necessarily identical with a company or enterprise, which may consist of one or more establishments.*

Payroll data were also not disclosed at the zip code level. To arrive at an estimate of wages generated in the study area, annual payroll per employee was calculated from *County Business Patterns* data for Harris County for the same year (1999). These estimates were then applied to the estimates of employment by industry.

Using these calculations, employment in zip code 77007 generated approximately $809 million in wages in 1999 (see **Table 4.14** in the Appendix to this chapter). As with the employment data, this estimate is similar to the actual amount aggregated by the Census Bureau of $630.8 million. The slightly higher payroll figure is to be expected because it is based on a higher estimate of employment (20,717 versus 18,146 persons).

Wholesale trade comprised the largest percentage of payroll in the area (23.8 percent), followed by manufacturing (17.0 percent) and construction (16.1 percent). Those employed in the management of companies and enterprises received the highest earnings in the Houston area, with an average of nearly $70,500 in payroll per employee paid in 1999. Accommodation and food services workers received the lowest compensation ($12,211), followed by retail trade ($20,378), and other services ($20,813).

Estimated Employment by Industry



Source: Calculated from *Zip Code Business Patterns* data

Nonemployer Statistics

Unlike other businesses, which must file payroll tax forms, ***nonemployers*** *do not receive census questionnaires and are not included in most business statistics published by the U.S. Census Bureau.*

The *Zip Code Business Patterns* data presented in the previous section do not include self-employed persons or unincorporated partnerships. Self-employment activity at the national level is reported by the U.S. Census Bureau's *Nonemployer Statistics* program, which summarizes the number of establishments and sales or receipts of companies with no paid employees. Nonemployers are typically self-employed individuals or partnerships operating businesses that they have not chosen to

incorporate. (Self-employed owners of incorporated businesses typically pay themselves wages or salary, so that the business is considered to be an employer and, as such, would be covered by other data series.)

According to the Census Bureau, nonemployers account for nearly three-quarters of all businesses but represent only three percent of business activity in terms of sales or receipts. Most nonemployer businesses are very small, and many are not the primary source of income for their owners. Without data on sales and receipts for businesses in the study area, producing a reliable estimate of the economic impact of nonemployer activity is impossible. However, the national data suggest that the impact is marginal.

Recent Real Estate and Development Activity

The Inner Katy area has experienced significant land development activity in recent years. This has resulted from substantial development pressure from surrounding neighborhoods, especially the Memorial Park area to the west and downtown Houston to the east. According to the city's records, 767 permits were filed in the 77007 zip code in 2001 (details are in **Table 4.3**). While some of these permits were related to flood damage sustained in the area during the June 2001 floods, the majority were for new residential construction.

TABLE 4.3:
Permits Filed in Zip Code 77007: 2001

Type of Permit	Number of Permits Filed	Percent of Permits Filed
New residential construction, single-family (includes townhouses)	389	50.7%
New residential construction, multi-family (duplexes and apartments)	40	5.2%
New commercial construction	11	1.4%
Remodel/repair	194	25.3%
Demolition/dangerous structure	63	8.2%
Other (e.g., pools, parking, utilities)	70	9.1%
TOTAL PERMITS	**767**	**100.0%**

Source: Calculated from City of Houston permit data

Findings from the city's permit data were quickly confirmed by a visual inspection of the area, which revealed a tremendous amount of new construction, particularly of multi-family properties, and rehabilitation of existing homes. The area is a mix of housing types, with $500,000 Victorians bumping up against run-down bungalows. A complete record of existing home sales in the area was not available. However,

calculations performed on a sample of recent home sales in the 77007 zip code revealed a range of $31 (4514 Katy Freeway) to $210 (5422 Feagan) per square foot.

The eclectic nature of the area was also evident in a search of multiple listing service (MLS) data for the 77007 zip code. The search, conducted at www.realtor.com, revealed 462 residential properties for sale, and 55 parcels of vacant land. Residential properties ranged from a low of $30,000 for a dilapidated 2-bedroom, 1-bath home along the industrial rail line, to a high of $9.5 million for a 4-bedroom, 6.5-bath high-rise condominium on Westcott Avenue. Prices for vacant land currently listed on the MLS ranged from a low of $7 per square foot on Allston Avenue on the edge of Houston Heights to a high of $45 per square foot on Eigel Avenue near Memorial Park.

The Inner Katy area also has a wide variety of non-residential activities. The area along Washington Avenue has the heaviest concentration of commercial activity, although there is little office space available. Land uses along this avenue range from new strip malls with national franchises, such as Walgreens and Quiznos Subs, to small ethnic markets, individually owned restaurants, and tire and automotive repair shops. One of the more notable aspects of the street is the presence of local landmarks, such as the Wabash Antiques and Feed Store, as well as one of the seven remaining Pig Stand drive-ins in the state. There are also a number of vacant and abandoned properties.

Washington Avenue is already attracting significant new development, including mixed-use projects

Just to the north of Washington is a mix of industrial property, social services, and residential neighborhoods. Generally speaking, this area has not seen the same level of residential redevelopment as other parts of the study area. Many of the homes are in disrepair. The area south of Washington is primarily residential, although there is a scattering of small businesses, such as Patrenella's Restaurant on Jackson Hill. Several of the north-south streets that cross Washington have experienced commercial renovation. Examples of this are Yale and Heights, which have an interesting mix of small commercial establishments, particularly along the northern edge of the study area.

From a commercial or industrial development standpoint, Washington Avenue and other older thoroughfares within Inner Katy present significant challenges. First, recent activity in the area has resulted in land speculation, which has driven up costs dramatically. As a result, the profit margins are not sufficient to attract most developers. As one realtor put it, developers have "already moved on" to other parts of town. In addition to high land costs, the size of the parcels also presents an obstacle. Many of the available properties are too small or too shallow (or both) for

some types of development, leaving interested developers or end-users with an arduous land assembly process, further increasing development costs.

Real Estate Outlook

Inner Katy market information is difficult to find. The study area is often encompassed in a much larger submarket, such as "inside the Loop" or in the central business district (CBD). Data on various real estate types from *Market Outlook 2002*, published by CB Richard Ellis, are displayed in **Tables 4.15, 4.16 and 4.17** (see Appendix to this chapter). Office and industrial data for the Inner Katy study area are included in their CBD submarket, which includes all areas within Loop 610. As a result, the data are undoubtedly skewed by the downtown market. A realtor interviewed for this section suggested a differential of $6-8 per square foot between lease rates in the downtown versus the study area. While vacancy rates would typically be higher in the study area, the recent downturn in the energy sector has resulted in higher than normal vacancy rates in downtown Houston.

Shallow, small parcels along portions of the area's traditional commercial corridors are a practical barrier for some redevelopment activity

The CB Richard Ellis *Outlook* includes the Inner Katy area in two multi-family submarkets, Brookhollow and Heights. (These submarkets, particularly the Brookhollow submarket, also include areas outside the Inner Katy area.) Anecdotal evidence suggests that recent multi-family construction projects are renting at substantially higher rates than indicated by the CB Richard Ellis statistics. For example, a recent *Houston Business Journal* article (February 22, 2002) reported that the Sabine Street Lofts were commanding rental rates ranging from $1.40 to $1.69 per square foot. While this project is not typical of others in the area, it does provide an indication of the rents that may be achieved by Class A luxury space.

Houston has experienced strong growth in the retail sector. According to the CB Richard Ellis report, occupancy rates have been steady citywide, with properties experiencing "record-breaking rental rates." Construction also remained steady, with 2.7 million square feet added to the market in 2001. At the time of the report, another 29 retail centers, totaling 5.2 million square feet, were under construction. Much of Houston's retail growth can be attributed to the construction of "lifestyle centers." These largely suburban properties are open-air community centers anchored by large specialty tenants, such as Barnes & Nobles, or discounters like Best Buy. **Table 4.17** (in Appendix to this chapter) provides information on the retail market for the Inner Loop submarket, which includes the majority of the study area.

In 2001, Houston retail rates by type of center were:

- Regional Mall (600,000+ sq. ft.): $38.00 per square foot
- Community (150,000 - 599,999 sq. ft.): $20.00 per square foot

- Strip Center (25,000 - 149,999 sq. ft.): $18.00 per square foot
- Neighborhood (10,000 - 24,999 sq. ft.): $20.00 per square foot

Analysis of Long-Term Redevelopment Potential

The analysis of redevelopment opportunities in the Inner Katy study area was approached in two ways:

(1) identification of specific sites with short-term redevelopment potential based on review of market data and trends, interaction with area real estate specialists, and direct observation of the study area; and,

(2) identification of longer-term redevelopment potential (over a 20- to 30-year timeframe) for all properties in the study area using a computer model.

TIP Development Strategies, Inc. conducted the initial opportunity site analysis to pinpoint sites in the Inner Katy area with immediate and mid-term redevelopment potential. TIP also pointed out constraints to redevelopment, such as parcel size and market demand in the area for particular types of development (residential, retail, office, industrial, etc.). These are key considerations in planning for Inner Katy to produce tangible change in the short-term time horizon.

Fregonese Calthorpe Associates (FCA) completed the second, longer-term component of the redevelopment opportunities analysis using a software program called PLACE^{3}S (Planning for Community Energy, Economic, and Environmental Sustainability). Just as most development proposals are subjected to a basic "pro forma" financial analysis to evaluate their likely profitability, the PLACE^{3}S model efficiently did the same type of analysis for the entire study area. The model determined what land uses (residential, office and/or retail) could profitably be developed on each parcel based on its current land and improvement value, but otherwise ignoring the property's current use. The model was customized for the Inner Katy area by inputting data about local parcel sizes, building and land values, lease and vacancy rates, construction costs, and applicable City Code provisions that affect development potential (e.g., building setbacks, required off-street parking, etc.). Further details of the modeling methodology are included in the Appendix to this chapter. The model was also used in later stages of the Inner Katy study to gauge the likelihood of a given land use scenario to result in redevelopment.

The FCA analysis is market-demand neutral, meaning it does not take into account actual market demand for a particular amount or type of development in the study area. The model assumes market demand for a variety of different land uses and then determines which parcels are most likely to redevelop in the long term. Market demand can change rapidly in close-in neighborhoods such as Inner Katy, greatly affecting the dynamics of real estate development in a matter of five to 10 years. Further, new high-capacity transit service and other public infrastructure investments can greatly alter future market demand. The FCA analysis is most useful in determining overall route selection, as well as recommending transit station locations on the basis of projected long-term redevelopment potential.

Another market reality relevant to this analysis is property owner intentions. While some properties may be prime for redevelopment, the owners may have no plans, short-term or longer-term, to pursue such opportunities. Legal restrictions or local community values, such as historic preservation measures for a particularly valued subdistrict (such as the Old Sixth Ward or Houston Heights), may also limit redevelopment potential that is based only on financial calculations.

Model Results

The analysis of longer-term redevelopment potential in the Inner Katy area, using the PLACE^{3}S model, yielded the following findings:

- Assuming constant market demand for each major land use category (residential, office and retail), residential is the least profitable land use for long-term redevelopment, generating the least estimated revenue compared to development costs. Because of property values and other factors within Inner Katy, the least amount of redevelopment occurred (i.e., the least number of parcels redeveloped) when a scenario was considered with residential as the major focus of redevelopment. This model result is displayed in **Figure 4.1**.
- Office use is the second most profitable development type within Inner Katy over the long term, falling between residential and retail use. As displayed in **Figure 4.2**, more parcels have redevelopment potential under an office scenario than an exclusively residential scenario (Figure 4.1).
- Retail is the most profitable land use for long-term redevelopment. As displayed in **Figure 4.3**, the model shows that most parcels in the study area, except in the Heights, would be profitable if developed for retail use.

The corresponding acreage amounts for each of the three redevelopment scenarios are presented in **Table 4.4**. As comparison of the maps indicates, one point of this analysis is to highlight that if a property can support residential redevelopment, which is the least profitable of the three uses, then it will automatically be viable for office and retail use as well. Properties that are not selected in any of the scenarios are considered economically unattractive for redevelopment.

TABLE 4.4:
Acres with Redevelopment Potential

Scenario	Acres
Residential	1,120
Office	1,431
Retail	2,449

NOTE: The acreage totals only reflect projected redevelopment activity. For properties that will redevelop, any existing development would be "replaced" and is not reflected in these acreage totals. For properties that will not redevelop and which have existing residential, office or retail development, this development is also not reflected in these acreage totals.

Potential for Transit-Oriented Development (TOD)

The potential for a land use mix that would strongly support transit use in Inner Katy was an important consideration of the redevelopment analysis. Therefore, the PLACE^{3}S model was next used to create a baseline transit-oriented land use scenario in which all three land use types (residential, office and retail) were considered simultaneously versus one at a time. This "combined" scenario assumes that TODs benefit from a large base of residential use and an accompanying mix of both retail and office use.

To achieve this desired land use mix, which is presented in **Figure 4.4**, the model was first used to identify all parcels that would be viable for redevelopment in all three land use types. For purposes of this scenario, these parcels were then allocated to residential use to ensure a solid residential base in the area. Next, all parcels that could feasibly redevelop for both office and retail use were allocated to office use to ensure a good mix of office and retail activity. These parcels are shaded purple in Figure 4.4. Finally, parcels that would only be profitable for retail redevelopment are shaded red in Figure 4.4. The acreages resulting from the "combined" scenario are presented in **Table 4.5**.

NOTE: The acreage totals only reflect projected redevelopment activity. For properties that will redevelop, any existing development would be "replaced" and is not reflected in these acreage totals. For properties that will not redevelop and which have existing residential, office or retail development, this development is also not reflected in these acreage totals.

TABLE 4.5:
Redevelopable Acres per Combined Land Use Scenario Map

Land Use	Acres
Residential	1,120
Office	324
Retail	1,018
TOTAL	**2,461**

NOTE: The Retail acreage differs from Table 4.4 due to limitations placed on deed-restricted areas.

One point of this combined scenario is to show how a more transit-oriented redevelopment pattern may differ from what purely market-driven land use decisions would produce. In the modeling exercise, some parcels had to be directed into less profitable uses, such as office versus retail and residential versus either office or retail, to yield a more desired land use mix.

Development Capacity Analysis

Once a parcel was determined to have redevelopment potential based on the pro-forma analysis, the actual development capacity in terms of new households and employment was calculated by accounting for constraints imposed by current development regulations and site factors (as explained further in the model methodology discussion in the Appendix to this chapter). The results of this

capacity analysis are shown graphically in **Figures 4.5** and **4.6**. The accompanying numerical results are presented in **Table 4.6**.

TABLE 4.6:
Number of Net Households and Employees from Potential Redevelopment

Growth Element	Total	Redevelopable Acres
Households	40,610	1,120
Employees	35,172	1,341

NOTE: The household and employment totals only reflect the results of projected redevelopment activity. For properties that will redevelop, any existing households or employment would be "replaced" and are not reflected in these totals For properties that will not redevelop and which have existing development, any associated households or employment are also not reflected in these totals.

Later in the study, through the Feasibility Analysis conducted in Chapter 6, these initial conceptual calculations of potential new households and employment were subjected to a "reality check" to bring such large numerical estimates back into line with Inner Katy market realities.

Redevelopment Likelihood and Timing

The initial PLACE^{3}S analysis of the study area made a simple determination – each parcel either has long-term redevelopment potential or it does not. The map in **Figure 4.7** categorizes the parcels into multiple categories, showing which parcels are more likely to redevelop than others. The current redevelopment potential of each parcel was estimated based on residential Return on Investment (ROI). For example, the light purple parcels, those with an ROI between six and eight percent, may redevelop in the long term but are not currently displaying redevelopment potential for three-story housing (which, as explained in the model methodology in the Appendix, was used in the model to represent the typical building size currently being constructed in Inner Katy residential redevelopment projects). This final step in the modeling process begins to introduce the time element by highlighting those areas with the most obvious and immediate redevelopment potential.

It should be noted that when a parcel is said to have "redevelopment potential," this implies that the property has the economic viability to accommodate a new or more intensive use in the long term, in the same way that vacant land may be feasible for development. However, as noted previously, parcels estimated to have redevelopment potential may or may not redevelop in a 20- to 30-year period depending on the property owner's plans. In addition, more, fewer, or even different parcels may redevelop than were estimated through this analysis as conditions change.

Conclusions on Redevelopment Potential

Based on both the opportunity sites evaluation conducted by TIP Development Strategies and the more comprehensive redevelopment modeling completed by Fregonese Calthorpe Associates, significant long-term redevelopment potential exists within the Inner Katy study area. The FCA pro-forma analysis demonstrates

that prevailing rents and construction costs as well as predominant building types in Inner Katy do not represent obstacles to long-term redevelopment for most of the study area. Exceptions include the Heights area and the residential area bordering the east side of Memorial Park, where land and building values are higher than the overall study area. However, the pro-forma analysis does not consider potential market demand in the Inner Katy area to absorb the projected extent of development activity. The interaction of development supply and demand is considered in Chapter 6, Feasibility Analysis.

Undeveloped properties and vacant buildings along both potential alignments offer redevelopment opportunities

Moreover, the potential for new office development must be examined in light of regional real estate market factors. For example, one issue is the high vacancy rate of office space in the metropolitan area and in the nearby CBD. The amount of time necessary for excess regional office space to be absorbed will affect how soon office use will be viable in Inner Katy.

Upon completing its review of shorter-term redevelopment opportunities within Inner Katy, TIP Development Strategies pointed out that any significant retail development will continue to be delayed in the near term by relatively high land costs and limited potential for on-site parking. Second, land assembly is difficult in most of the study area with the notable exception of the industrial land to the northwest and along portions of both Alignments B and C where larger parcels still exist.

These development issues should be considered in conjunction with the pro-forma analysis, especially in selecting transit station locations. Redevelopment in the short term on prime sites may be the key to increasing market demand in the vicinity, thus setting the overall level of redevelopment that will occur in the Inner Katy area over the longer term. Furthermore, if high-capacity transit is truly a possibility for Inner Katy, then timely redevelopment of transit station areas will help to build the necessary ridership to support HCT.

With the above considerations and qualifications in mind, the redevelopment potential illustrated in Figure 4.7 became an important input for subsequent steps of the Inner Katy study. Through the Alternative Development Scenarios phase (Chapter 5) and the Feasibility Analysis (Chapter 6), land use strategies were explored and transit mode, route and station locations considered that would help generate both desired redevelopment activity and transit ridership in the long term. The remainder of this chapter turns to discussion of the economic and redevelopment opportunities associated with major transit investments.

Impact of Transit

According to a 1999 study prepared by Cambridge Systematics, Inc. and Economic Development Research Group, capital investment in transit projects is a significant source of job creation in the national economy. The study found that, in the short term, transit investment creates 314 jobs for each $10 million invested. Long-term impacts (over a period of 20 years) decline significantly but remain positive.

Public Transportation and the Nation's Economy: A Quantitative Analysis of Public Transportation's Economic Impact. *October 1999, Cambridge Systematics, Inc. with Economic Development Research Group.*

The report also found that capital and operating investments in transit lead to positive fiscal impacts for government. According to the study, state and local governments that invest in transit have experienced revenue gains of between four and 16 percent from the additional income and employment generated. The private sector also benefits, with sales gains as high as $3 for every $1 of public investment in transit.

The Appendix to this chapter includes a summary of reports and studies regarding the impact of rail transit on the value of residential and commercial property as compiled by the American Public Transportation Association (APTA).

Case Studies

The following case studies examine the economic impact of light rail projects in Portland, Oregon, and Dallas, Texas. These cities were chosen due to the success of their light rail systems and the direct knowledge of the consulting team. Given the constraints of this study, the analysis is largely based on secondary data.

Portland, Oregon (Tri-Met)

Portland's light rail system, known as MAX (the Metropolitan Area Express), is one of most celebrated light rail projects in the United States. Operated by the Tri-County Metropolitan Transportation District of Oregon (Tri-Met), the 38-mile system connects Portland and Gresham in the east with the cities of Beaverton and Hillsboro to the west. It includes a 5.5-mile extension, completed in the fall of 2001, providing service to Portland International Airport. The agency also provides bus service to the tri-county area, consisting of 97 routes, 84 of which connect with MAX. Light rail carries 25 percent of the Tri-Met's weekday ridership, or approximately 69,800 riders.

Construction of the initial 15-mile rail line, completed in 1986, was part of a "conscious strategy to shape regional growth by coordinating transportation investments with land use policies." This coordination is largely the job of Metro, the elected regional government responsible for transportation and land use planning in the Portland metropolitan area. Formed in 1979, Metro is the lead planning agency for approximately 460 square miles of the urban portion of three counties: Multnomah, Clackamas, and Washington. While transportation and land use planning are the focus of the agency, they are viewed as a means to an end. The stated goal for both Metro and Tri-Met is the creation of a livable community.

The long-term strategy can be summarized as planning for the end of the suburbs – the transformation of suburban town centers into mixed use, walkable places, with development focused around rail stops at an urban scale.

G.B. Arrington, former Director of Strategic & Long-Range Planning, Tri-Met

The MAX system has played a significant role in shaping the Portland area during the last several decades, particularly the city's downtown. Tri-Met claims that one-third of work trips to downtown Portland are made by transit, amounting to the equivalent of two lanes of traffic on every major thoroughfare to downtown. Proponents claim that light rail has "won the war with the automobile," pointing to statistics which indicate that transit ridership grew 20 percent faster between 1990 and 1996 than vehicle miles traveled.

Light rail has also spurred private investment in the area, particularly in the city's central business district. According to a 1998 report, *At Work in the Field of Dreams*, investment in new development around rail lines has already exceeded the cost of the project nine-fold. More than $2.9 billion in development has occurred along the MAX line. The majority of this investment, approximately $2 billion, has occurred along the original 15-mile "Eastside MAX" connecting Portland with Gresham. This line, which was constructed through existing neighborhoods, has proven to be a catalyst for redevelopment and infill. It has also been credited with the revitalization of the eastern portion of downtown Portland.

The 18-mile "Westside MAX" connecting Portland with cities to the west has also spurred private investment, although on a more modest scale. Development along this line, which runs through primarily undeveloped land, has been largely residential. According to a 1997 Portland State University study, MAX has had a positive impact on residential property values in the region. A single-family home next to a light rail station on Portland's east side commands a 10 percent higher price than one 1,000 feet away from the station. "This willingness to pay a premium for single-family housing having light rail access is a significant and positive land-use benefit of the light-rail transit investment," the study concluded.

While the Eastside line was built "where the riders were," the Westside line was used to create a new corridor "where the riders will be." As a result, new transit-oriented developments have been built around the Westside MAX stations. One such development is Orenco Station, a neo-traditional style master planned community in suburban Hillsboro. The 190-acre site was originally slated as a commercial/industrial park. Tri-Met worked with city officials to change the zoning to residential, causing the developer PacTrust to change plans. This coordinated effort resulted in the construction of an award-winning, mixed-use development centered around a MAX station of the same name.

Tri-Met officials point out that light rail has not caused new development but has "influenced the location, design and timing." This can be seen in the Orenco Station example, as well as in the development that has taken place in the Lloyd District, on Portland's east side.

Lloyd Center Station

Prior to construction of the light rail system, downtown development had occurred primarily to the west of the Willamette River, which bisects the city.

Upon completion of the MAX line, a number of major investments have been made in the Lloyd District, an area of just over 300 city blocks bordered by the river to the west, Northeast Schuyler Boulevard to the north, I-84 to the south, and NE 16th Avenue to the west. The district was already home to several major housing and commercial properties, as well as the Lloyd Center Mall, believed to be the nation's first regional-scale mall, and the offices of the Port of Portland. However, the physical connection provided by the light rail system between east and west was considered a driving force behind subsequent public and private investments, including the decision to locate Portland's $85 million convention center outside of the central city. This was followed by construction of the $262 million Rose Garden sports arena, home to the Portland Trailblazers of the National Basketball Association, as well as a number of other developments.

Lloyd Center Station and its associated light rail line helped to make the entire Lloyd District of Portland a magnet for significant public and private investments that likely would have gone elsewhere

The following statistics are for the area surrounding Lloyd Center Station, one of the four stations located in the district. The station, at 11th Avenue and NE Halladay Street, is in Census tract 24.02 and in the 97232 zip code.

The geographic boundaries of Census tracts used in these case studies remained the same between the 1990 and 2000 censuses. Comparisons of zip code boundaries could not be made.

- *Population and Housing*: Population in Census tract 24.02 increased by more than 17 percent from 1990 to 2000. By comparison, Multnomah County, in which the city of Portland is located, grew by just 13 percent during the same period. The number of housing units in the tract also increased by approximately 15 percent.
- *Property Taxes:* Property tax data for the corridor were not available. However, **Table 4.7** contains a partial inventory of development around Lloyd Center Station. To arrive at a rough approximation of the tax revenue generated by this development, the city's 2001 tax rate of $6.90 per $1,000 of assessed value was applied to the entire valuation, resulting in an estimate of $5.3 million. Using the consolidated tax rate of $20.95 per $1,000 of assessed value, the estimate jumps to $16.1 million. (The consolidated rate includes each of the nine taxing jurisdictions in the City of Portland).

  Of course, actual property tax revenues would vary since several of the properties in Table 4.7 may be tax exempt (such as the state and federal office buildings) or eligible for tax abatements (such as the convention center and arena).
- *Sales Taxes*: Oregon does not have a sales tax.
- *Employment and Wages*: Until recently, employment and wage data have not been published below the county level. Zip code level statistics are now available from the most recently published Economic Census conducted in 1997, but not from prior years. *Zip Code Business Patterns* data are available

beginning with 1994, nearly a full decade after construction of the Eastside line.

Table 4.8 compares *Zip Code Business Patterns* data for 1994 and 1999, the most recent year for which data are available, for the Lloyd Center Station area.

TABLE 4.7:
Partial Inventory of Development Adjacent to Lloyd Center MAX Line: 1996

Development	Property Type	Year	Value *($000s)*
Rose Garden Arena	public	1995	$262,000
Lloyd Center Mall *(renovation/expansion)*	retail/office	1990	200,000
Oregon Convention Center	public	1990	85,000
Federal Office Building East	office	1987	55,000
Liberty Centre	office	1996	40,000
Lloyd Center Red Lion Inn	commercial	1981/1992	38,000
Lloyd Center Tower	office	1981	33,000
Holladay Corridor Improvements	public	1989	22,000
Lloyd Place Apartments	residential	1996	12,000
State Office Building	office	unknown	11,500
Holiday Inn	commercial	1991	3,000
Moyer Theater	commercial	1986	3,000
500 Lloyd Building	office	unknown	2,172
Kaiser Permanente	office	1985	2,170
Oregon Square	office	unknown	931
Port of Portland Building (renovation)	office	unknown	393
TOTAL			**$770,166**

Source: Tri-Met

TABLE 4.8:
Zip Code Business Patterns Data: 97232

Indicator	1994	1999	Percent Change
Number of establishments	1,086	1,167	7.5%
Number of employees	20,118	21,072	4.7%
Annual payroll *(in thousands)*	$495,799	$712,570	43.7%

Source: U.S. Census Bureau

Dallas, Texas (DART)

Dallas Area Rapid Transit (DART) was created by referendum in August 1983 and is responsible for transportation services for its 13 member cities (Addison, Carrollton, Cockrell Hill, Dallas, Farmers Branch, Garland, Glenn Heights, Highland Park, Irving, Richardson, Rowlett, Plano and University Park). Bus services are provided for all member cities. Light rail and commuter rail service (the Trinity Railway Express) is currently available within the City of Dallas and between Dallas and Fort Worth, with rail extensions planned for Garland, Richardson and Plano by 2003. Additional light rail lines are planned for Dallas' Fair Park in 2006, Pleasant Grove in 2007, Carrollton and Farmers Branch in 2008, North Irving in 2009, and Dallas-Fort Worth International Airport in 2010. The accelerated expansion program also calls for improved bus service and 110 miles of high-occupancy vehicle (HOV) lanes. The DART system handled 95.7 million passenger trips in fiscal year 2001, of which nearly 13 million were made by rail.

Like the Portland system, the DART system has a stated goal of stimulating economic development. This focus can be seen in the agency's mission statement, as well as its guiding principles:

- "The mission of Dallas Area Rapid Transit is to build, establish and operate a safe, efficient and effective transportation system that, within the DART Service Area, provides mobility, improves the quality of life, and stimulates economic development through the implementation of the DART Service Plan as adopted by the voters on August 13, 1983, and as amended from time to time." (www.dart.org/missionstatement.asp)
- Guiding Principles related to Land Use and Economic Development from *DART 2025 Transit System Plan Update*, Spring 2002:
  - Promote a region that is transit-oriented and places priority on transit.
  - Support transportation and land use planning that help achieve a better quality of life within the North Texas region.
  - Provide a system that is compatible with the community it serves and minimizes environmental impacts.

- § Support member cities' economic development objectives by coordinating improved transit services.
- § Encourage initiatives to invest at or near transit facilities.

By most accounts, the DART light rail system has been highly successful. Since the start of construction in 1996, the 20-mile starter rail, as well as an additional three-mile extension, have been completed on time and within budget. Ridership has also been above projected levels. The starter rail line averaged 18,000 riders per day initially – above the projected level of 15,000 passengers per day. Since that time, ridership has more than doubled, with DART's light rail serving more than 39,000 passengers each weekday in fiscal year 2001.

The DART light rail system has also been successful in attracting private investment. According to the agency, nearly $1 billion in private development has been generated along existing and future lines. A study conducted by the Center for Economic Development and Research at the University of North Texas (UNT study) found that the taxable value of property around DART stations was about 25 percent higher than comparable properties not served by rail. Critics have charged that some of this development has come at the expense of downtown Dallas, which has experienced lower levels of construction and higher vacancy rates during this period (see, for example, www.publicpurpose.com). However, rail proponents argue that Dallas's high vacancy rates were a result of overbuilding and economic downturns and that they have actually reversed since construction of light rail in 1996 (www.lightrailnow.org/myths/).

The intersection of US 75 and Mockingbird Lane was already a well-known crossroads in Dallas, but the addition of Mockingbird Station has attracted a critical mass of transit-oriented development to the area

(Aerial view courtesy of the North Central Texas Council of Governments)

Mockingbird Station

One of the most successful stations in the DART system is Mockingbird Station, a 10-acre, mixed-use development located near Mockingbird Lane and the North Central Expressway (Highway 75). The station, which opened in 1997, has been successful in terms of ridership – serving an average of 2,500 passengers daily – and in attracting private investment. The $105 million high-density development includes 211 luxury loft apartments, 220,000 square feet of retail, an office building, and eight-screen movie theater. Demand for retail space at the station has been so strong that construction was scheduled to begin in Fall 2002 to add an additional 50,000 square feet of retail.

The following statistics are for the area surrounding Mockingbird Station, which is located at 5465 E. Mockingbird Lane in Census tract 3 and zip code 75206:

- *Population and Housing:* Census tract 3 added 531 residents between the 1990 and 2000 censuses, an increase of almost 17 percent. This rate was only slightly below that of the city of Dallas as a whole, which saw an increase of 18 percent during the decade. By comparison, the state of Texas grew by nearly 23 percent. The number of housing units in Census tract 3 increased by 22.6 percent, from 1,884 to 2,310.

- *Property Taxes:* As shown in **Table 4.9**, retail land around the station saw the largest gains in property value according to the UNT study, increasing by nearly 79 percent between 1994 and 1998. This was more than six times the rate of increase seen at the other 14 stations in the study and 10 times that of comparable properties not served by light rail.

- *Sales Taxes:* Since the first retail space was not occupied until 2001, the specific impact of Mockingbird Station on retail sales could not be analyzed. However, according to the UNT study, retail sales in the city's central business district (defined as zip codes 75201 and 75202) increased by 36.2 percent from the initial year of DART operation (July 1996 through June 1997) to the following year (July 1997 through June 1998). By comparison, retail sales growth citywide was only 3.6 percent during the same period.

TABLE 4.9:
Average Percent Change in Total Property Values
Near Mockingbird Light Rail Station: 1994-1998

	Percent Change 1994-1998		
	Mockingbird Station	Average of all stations studied	Average of comparable areas not served by light rail
Retail	78.7%	12.4%	7.8%
Office	9.4%	29.0%	6.3%
Residential	28.1%	11.0%	16.1%
Industrial	-11.6%	3.8%	n/a
Vacant	n/a	-5.1%	26.4%
All Properties	27.2%	16.0%	12.9%

Source: University of North Texas, Center for Economic Development and Research

- *Employment and Wages: Zip Code Business Patterns* data are only available through 1999. As a result, the full impact of Mockingbird Station on employment and wages in the area cannot yet be determined. **Table 4.10** provides the available data for reference.

TABLE 4.10:
Zip Code Business Patterns Data: 75206

Indicator	1994	1999	Percent Change
Number of establishments	1,391	1,436	3.2%
Number of employees	17,924	18,609	3.8%
Annual payroll *(in thousands)*	$498,364	$608,800	22.2%

Source: U.S. Census Bureau

Despite the development's success, the experience of at least one Mockingbird Station business owner serves as a reminder of the difficulties of mixing transit-oriented development with Texas' automobile-oriented culture. A recent *Dallas Business Journal* article (May 17, 2002) cites inadequate parking as the primary reason for the failure of Café Patrique, the first restaurant to open at the station last year. The restaurant's owner reported that his customers "didn't feel comfortable" using the underground parking structure where most of the development's 1,400 parking spaces are located. However, other concerns were also mentioned in connection with the restaurant's failure, including patron security and financial problems (*Dallas Business Journal*, April 19, 2002).

APPENDIX A: Additional Data Tables

TABLE 4.11:
Estimated Property Tax Revenues for Selected Property Types: 2000

Property Type	Taxable Value	City of Houston		Harris County	
		Tax Rate	Revenue Estimate	Rate	Revenue Estimate
Residential, vacant	$4,665,140	0.6550	$30,556.67	0.35902	$16,748.79
Residential, S-F	$436, 212,108	0.6550	$2,857,189.31	0.35902	$1,566,088.71
Residential, M-F	$164,355,410	0.6550	$1,076,527.94	0.35902	$590,068.79
Commercial, vacant	$129,544,090	0.6550	$848,513.79	0.35902	$465,089.19
Commercial, asstd.	$465,078,847	0.6550	$3,046,266.45	0.35902	$1,669,726.08
Industrial, vacant	$24,977,010	0.6550	$163,599.42	0.35902	$89,672.46
Industrial, assorted	$37,518,466	0.6550	$245,745.95	0.35902	$134,698.80
TOTAL	**$1,794,102,359**		**$8,268,400**		**$4,532,093**

Source: Harris County Appraisal District

TABLE 4.12:
Amount Subject to Sales Tax by Retail Segment: 1990, 2000
Zip Code 77007

1990			2000			Change in Sales 1990-2000
Amount Subject to State Sales Tax	Percent of Total	Reporting Outlets	Amount Subject to State Sales Tax	Percent of Total	Reporting Outlets	
Building Materials & Garden Supplies						
$35,249,016	25.0%	22	$61,165,767	40.7%	26	73.5%
Food Stores						
8,911,964	6.3%	59	9,068,110	6.0%	48	1.8%
Automotive Dealers & Service Stations						
11,586,856	8.2%	47	10,805,274	7.2%	45	-6.7%
Furniture & Home Furnishing Stores						
12,307,196	8.7%	27	10,983,135	7.3%	47	-10.8%
Eating & Drinking Places						
22,644,535	16.1%	91	31,375,323	20.9%	102	38.6%
Miscellaneous Retail						
46,532,587	33.0%	100	22,118,279	14.7%	127	-52.5%
TOTAL Retail Trade						
$140,919,448	**100.0%**	**363**	**$150,207,390**	**100.0%**	**419**	**6.6%**

Source: Comptroller of Public Accounts

TABLE 4.13:
Establishments by Industry: 1999, Zip Code 77007

Industry Code (NAICS)	Industry Code Description	Total Establishments	
		Number	Percent
---	**TOTAL**	**1,004**	**100.0%**
21	Mining	3	0.3%
23	Construction	92	9.2%
31	Manufacturing	81	8.1%
42	Wholesale trade	129	12.8%
44	Retail trade	98	9.8%
48	Transportation & warehousing	32	3.2%
51	Information	13	1.3%
52	Finance & insurance	43	4.3%
53	Real estate & rental & leasing	46	4.6%
54	Professional, scientific & technical services	187	18.6%
55	Management of companies & enterprises	15	1.5%
56	Administration, support, waste management, remediation services	46	4.6%
61	Educational services	9	0.9%
62	Health care & social assistance	44	4.4%
71	Arts, entertainment & recreation	7	0.7%
72	Accommodation & food services	54	5.4%
81	Other services (except public administration)	91	9.1%
95	Auxiliaries (except corporate, subsidiary & regional management)	3	0.3%
99	Unclassified establishments	11	1.1%

Source: U.S. Census Bureau, *Zip Code Business Patterns*

TABLE 4.14:
Estimated Payroll by Industry: 1999, Zip Code 77007

Industry Description (NAICS Code)	Estimated Number of Employees	Annual Payroll per Employee (Harris County)	Total Estimated Payroll	Percent of Total Estimated Payroll
Mining (21)	20	$69,053	$1,346,527	0.2%
Construction (23)	3,539	$36,831	$130,344,068	16.1%
Manufacturing (31)	3,461	$39,716	$137,456,672	17.0%
Wholesale trade (42)	4,199	$45,908	$192,767,153	23.8%
Retail trade (44)	1,036	$20,378	$21,111,343	2.6%
Transportation & whsng (48)	1,459	$40,316	$58,801,152	7.3%
Information (51)	86	$54,910	$4,694,804	0.6%
Finance & insurance (52)	480	$54,743	$26,249,100	3.2%
Real estate (53)	359	$31,683	$11,358,452	1.4%
Professional, scientific & technical services (54)	1,185	$54,504	$64,586,780	8.0%
Management of companies & enterprises (55)	964	$70,482	$67,909,274	8.4%
Admin., support, waste mgmt., remediation svcs. (56)	1,023	$24,824	$25,382,908	3.1%
Educational services (61)	271	$33,181	$8,992,061	1.1%
Health care & social assistance (62)	757	$33,378	$25,267,160	3.1%
Arts, entertainment & recreation (71)	27	$27,077	$717,532	0.1%
Accommodation & food services (72)	896	$12,211	$10,941,323	1.4%
Other services (except public administration) (81)	895	$20,813	$18,627,425	2.3%
Auxiliaries (95)	36	$65,441	$2,355,889	0.3%
Unclassified establishments (99)	28	$32,663	$898,230	0.1%
TOTAL ESTIMATED	**20,717**	**n/a**	**$809,807,853**	**100.0%**

Source: U.S. Census Bureau, *Zip Code Business Patterns*

TABLE 4.15:
CB Richard Ellis Market Outlook: 2002, Office and Industrial

Space Type	Lease Rate 4Q 2001		Vacancy Rate 4Q 2001		Year-End Net Absorption (*sq. ft.*)	
	CBD	Houston Area	CBD	Houston Area	CBD	Houston Area
Office Market	$22.81	$19.13	7.23%	13.21%	125,267	1.3 million
Class A	$27.66	$23.86	5.04%	9.66%	N/A	N/A
Class B	$18.97	$16.95	11.25%	16.53%	N/A	N/A
Class C	$14.35	$13.46	33.78%	15.56%	N/A	N/A
Industrial	$22 - 35 (whs/dist) $20 - 25 (mfg)	N/A	8.19%	7.91%	233,056	2,195,213

Source: CB Richard Ellis

NOTE: Absorption is a measure of the change in physically occupied space between one measurement period and another. In other words, it tells the number of units (square feet, apartment units, etc.) that the market has "absorbed" during a given period.

TABLE 4.16:
CB Richard Ellis Market Outlook: 2002, Multi-Family Residential

Multi-Housing Submarkets	Number of Properties	Number of Units	Rental Rate per Square Foot 4Q 2001	Occupancy Rate 4Q 2001	4Q Units Absorbed
Heights	33	2,204	$0.733	93.8%	2
Brookhollow	94	18,943	$0.654	89.0%	-121
Houston	2,339	444,060	$0.717	91.5%	-1,471

Source: CB Richard Ellis

TABLE 4.17:
CB Richard Ellis Market Outlook: 2002, Retail

Retail Submarket	Lease Rate 4Q 2001	Vacancy Rate 4Q 2001	Net Rentable Area *(square feet)*	Square Feet Completed 2001
Inner Loop	$21.00	8.0%	7.7 million	309,000
Houston Area	$18.70	12.0%	127.1 million	2.7 million

Source: CB Richard Ellis

APPENDIX B: Redevelopment Model Methodology

The methodology for evaluating redevelopment capacity uses a typical real estate analysis (as is presented in the "pro forma" for a proposed development project) to estimate whether potential redevelopment would be profitable on each parcel. For each parcel, if the future revenue achieved after a hypothetical redevelopment project is greater than the hypothetical expenses of acquisition, demolition and construction, the parcel is considered to have redevelopment potential. The revenue and expense assumptions used in the redevelopment analysis are based on the RS Means CostWorks 2002 construction data and information gathered by TIP Development Strategies, Inc.

Redevelopment estimates conducted by FCA in other areas of the country usually rely on existing zoning to set the extent of possible building sizes and land uses. A different strategy was used for the Inner Katy area given Houston's flexible policy environment. Instead of using zoning parameters to set the extent of building sizes and uses, three typical building size and land use configurations were used that are presently being built in the immediate vicinity of the Inner Katy study area:

- 3-story residential buildings;
- 3-story office buildings; and,
- 1-story retail buildings.

The square footage of such buildings varies widely depending on parcel size and constraints, intended use, and the resulting building design and off-street parking needs. The important point is that building height indicates the scale of development that is economically feasible in the area and necessary for profitability given area land costs and the characteristics of available development sites. For this baseline analysis, it was assumed that new buildings in the study area will exhibit these same basic characteristics. Other detailed assumptions about these building types are presented in **Table 4.18** at the end of this Appendix section.

To determine the long-term redevelopment potential for each of these three uses and building types, three scenarios were created. In the first scenario, all parcels were assumed to be residential. In the second, all were assumed to be office. In the third, all parcels were considered retail use. Areas governed by residential-only deed restrictions were excluded from the office and commercial redevelopment scenarios. The model was run for each scenario to determine which parcels would redevelop based on their present land and improvement values.

Pro-Forma Calculations

The FCA model conducts the following steps:

(1) PLACE^{3}S estimates the size of potential future buildings.

- FAR (floor-to-area ratio) is a measurement of building intensity that is calculated from the parcel size and parking parameters for the potential building type. FAR is used in the model to determine how large a future building could be on any given site. This is a key piece of information as construction costs and rental income are a function of potential building size.
- Changes in parking requirements, size per stall, building height and many other inputs affect the FAR value in the model. Density is affected by the interaction of height limits and parking requirements. For example, off-street parking requirements often have the most impact on limiting development densities. Surface parking competes with the building footprint for available lot area, reducing development intensities. The more surface parking on a site, the less room there is for the footprint of the building.

(2) PLACE^{3}S estimates development costs for the potential project including:

- Acquisition (assessed building and improvement values).
- Demolition (estimated as a percentage of assessed improvement value).
- Building construction costs = building size from (1) * construction cost per square foot.
- Parking construction costs per stall.

NOTE: Assessed parcel values are low in the study area relative to actual sale and leasing prices. Market values range from 50 to over 200 percent higher. In the FCA model, all assessed values in the study area were increased by 50 percent to better approximate market values.

(3) PLACE^{3}S estimates development revenue for the potential project:

- Annual rent = square footage for each land use * rent per square foot * estimated future occupancy.

(4) If estimated development revenue (3) is greater than estimated development cost (2) by a minimum percentage or Return on Investment (ROI), the parcel is considered to have the potential for redevelopment.

(5) For parcels with redevelopment potential, capacity for additional households and employees is then estimated. Square-feet-per-employee and square-feet-per-dwelling-unit factors (shown in Table 4.18) convert potential building square footage to total new households and employees. The estimated numbers

of existing households and employees are subtracted from this calculation to give the net increase in housing units and employees.

Assumptions

In order to run, the redevelopment model relies on two types of assumptions: (1) global assumptions that apply to the entire study area, and (2) assumptions that vary according to the type of development (residential, office or retail). The following global assumptions were made for the Inner Katy area:

- One stall in a surface parking lot costs $3,000 to build. This covers all costs associated with parking including landscaping and irrigation. Each parking space amount is assumed to carry a portion of the parking area devoted to aisle and other maneuvering space.
- Demolition costs are approximately five percent of assessed improvement value (the square footage of the building is the ideal value to have for estimating demolition cost, but this data is not accurately maintained).
- An "underbuild" factor of 80 percent is included. The underbuild factor accounts for development inefficiency that typically arises from unique parcel configurations and existing features or building design choices that may not allow building sizes to be maximized to full capacity. For example, a gabled roof instead of a flat roof will decrease building square footage, just as would a porch, a recessed garage, or yard setback decisions.

The assumptions, or model inputs, that varied by development type are listed in Table 4.18.

TABLE 4.18:
PLACE^{3}S Assumptions that Vary by Development Type

Input	Residential	Office	Retail
Maximum Height (stories)	3	3	1
Square feet / development unit	1000 / dwelling unit	400	600
Parking spaces / 1000 square feet	1.5 / dwelling unit	3.25	4
Construction costs/ square foot	$57.50	$81.62	$61.00
Occupancy rate	89%	93%	92%
Rent (square foot / month)	$0.70	$1.09	$1.75
Parking Configuration	Surface Parking	Surface Parking	Surface Parking
Square footage / parking space	400 square feet	400 square feet	400 square feet
Necessary Return on Investment	10%	10%	10%

APPENDIX C: Findings on Property Value Impacts

The American Public Transportation Association (APTA) prepared the following summary of reports and studies regarding the impact of rail transit on the value of residential and commercial property (http://www.apta.com/info/briefings/brief1.pdf):

- ***Impacts of Rail Transit on Property Values*. Roderick B. Diaz, May 1999.** Recent studies of the impact of 12 rail projects (including both heavy rail and light rail) throughout North America are compared. In general, proximity to rail is shown to have positive impacts on property values. The relative increase in accessibility provided by the new transit investment is the primary factor in increasing property values. *Source:* APTA 1999 Rapid Transit Conference Proceedings Paper.
- ***The Initial Economic Impacts of the DART LRT System*. Bernard L. Weinstein & Terry L. Clower, July 1999.** Values of properties adjoining Dallas Area Rapid Transit (DART) light rail stations grew 25 percent more than similar properties not served by the rail system. Proximity to DART light rail stations appears to be a plus for most classes of real estate, especially Class A and C office buildings and strip retail. Average occupancies for Class A buildings near rail increased from 80 percent in 1994 to 88.5 percent in 1998, while rents increased from an average $15.60 per square foot to $23. Strip retailers near the stations registered a 49.5 percent gain in occupancy and a 64.8 percent improvement in rental rates. *Source:* Center for Economic Development and Research, University of North Texas, PO Box 310469 Denton, TX 76203.
- ***Transit's value-added: effects of light and commuter rail services on commercial land values.* Robert Cervero & Michael Duncan, November 2001.** This research uncovered significant capitalization benefits on commercial properties in proximity to rail transit. Land values increased by over $4.00 per square foot on average, or by around 23 percent, when within walking distance of a light rail station in Santa Clara County, California. For properties in commercial business districts and within a quarter mile of a CalTrain commuter rail stop, the capitalization premium was even larger – over $25 per square foot, or more than 120 percent above the mean property value. *Source:* Transportation Research Board, 81st Annual Meeting presentation January, 2002.
- ***The effect of CTA and Metra stations on residential property values. A report to the Regional Transportation Authority*. June 1997.** The regional benefits or comparative advantages transit provides to neighborhoods by improving accessibility, lessening congestion and reducing transportation costs make residential locations served by transit more valuable than comparable locations without transit service. Whether located in lower- or higher-income neighborhoods, proximity to Chicago Transit Authority (CTA) and Metra stations positively affects the value of single family homes. Furthermore, apartment properties located closer to

train stations tend to realize higher rents and occupancy levels than comparable apartments less conveniently located to train stations. *Source:* Gruen Gruen + Associates, San Francisco, CA.

- ***Impacts of commuter rail service as reflected in single-family residential property values.*** **Robert J. Armstrong, Jr., 1994.** Single-family residential properties in metropolitan Boston, Massachusetts, are examined. Results indicate there is an increase in single-family residential property values of approximately 6.7 percent by virtue of being located within a community having a commuter rail station. At the regional level, there appears to be a significant impact on single-family residential property values resulting from the accessibility provided by commuter rail service. *Source: Transportation Research Record* (no. 1466) pages 88-98. Transportation Research Board, Washington DC.

- ***Regional impact study commissioned by Bay Area Rapid Transit District (BART).*** **July 1999.** The Sedway Group's review of studies on the benefits associated with BART service in the Bay Area identified positive residential and office property impacts. Single family homes were reported to be worth from $3,200 to $3,700 less for each mile distant from a BART station in Alameda and Contra Costa Counties. Apartments near BART stations were typically found to rent for 15 to 26 percent more than apartments more distant from BART stations. The average land price per square foot for office properties also decreased as distance from a BART station increased, from $74.00 per square foot within one-quarter mile of a station to $30.00 per square foot for more than a half-mile distant. *Source:* The Sedway Group, San Francisco, CA.

- ***Rail transit and joint development: Land market impacts in Washington, DC and Atlanta.*** **Robert Cervero, 1994.** Data were examined for five rail stations in the Washington DC and Atlanta areas. Average office rents near stations rose with system-wide ridership; joint development projects added more than three dollars per gross square foot to annual office rents. Office vacancy rates were lower, average building densities higher, and shares of regional growth larger in station areas with joint development projects. Where regional market conditions are favorable, rail transit appears capable of positive impacts on station area office markets. *Source: Journal of the American Planning Association* V60n1 (Winter, 1994) pages 83-94.